FILE

Laucks 81 years
Testing Laboratories, Inc.
940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX 767-5063

Certificate

Chemistry, Microbiology, and Technical Services

CLIENT: Alaskan Copper Works
P.O. Box 3546
Seattle, WA 98124
ATTN: Raphael

LABORATORY NO. 18002

DATE: Aug. 30, 1989

PO# M11176

REPORT ON: WASTE SLUDGE

SAMPLE IDENTIFICATION: Submitted 08/10/89 and identified as shown below:

M11176

TESTS PERFORMED AND RESULTS:

The 96 hour static fish bioassay was performed in accordance with Washington State Department of Ecology methods, with results attached.

96 HOUR STATIC FISH BIOASSAY

Description of Test Set Up

The test was performed in triplicate at each concentration in 10 gallon glass aquaria (8" x 10" x 14") containing 30 liters of water. The water used in the test was tap water with a hardness of about 110 mg/L. Light was provided with fluorescent lamps for 18 hours per day. All test and control aquaria contained 10 organisms. All tanks were aerated during the first 24 hours of the test period; no further aeration was made during the 96 hour test period. The test was started on 08/14/89. The waste was added to the tanks directly.

Information About Test Organisms

Species:	Pimephales Promelas (fathead minnow)
Mean Weight:	0.49 g
Mean Length:	4.1 cm
Longest:	4.8 cm
Shortest:	3.8 cm
Ratio Long/Short:	1.3
Ratio Flesh/Water:	0.16 g/L
Source of Organisms:	Kurtz Fish Hatchery
Diseases Observed:	None
Fish Food Utilized:	Wardly's dry flake food for large Cichlids
History:	Fish were acclimated at least two weeks prior to the test.

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Test Results

Observations of effects or symptoms: No visible stress observed.

Mortalities observed in 30 test organisms:

	Mortalities	%
1000 parts per million	1	3.3
100 parts per million	1	3.3
control	4	13.

Water chemistry results: mean ± standard deviation

	1000 ppm	100 ppm	control
Dissolved Oxygen, mg/L	8.2 ± 0.8	8.2 ± 0.7	8.2 ± 0.7
pH	7.1 ± 0.3	6.9 ± 0.3	6.9 ± 0.2
Temperature, °C	22. ± 0.0	22. ± 0.0	22. ± 0.0
Hardness, mg/L	130. ± 4.1	130. ± 5.0	140. ± 15.
Alkalinity, mg/L	40. ± 1.0	36. ± 1.0	37. ± 1.0
Conductivity, micromhos/cm	320. ± 19.	310. ± 17.	340. ± 38.

Test organisms were acclimated at 22°C.

Test Methods Used for Water Chemistry

Dissolved Oxygen	SM*, part 421B
pH	SM*, part 423
Total Hardness	SM*, part 314B
Total Alkalinity	SM*, part 403
Specific Conductance	SM*, part 205

*SM = Standard Methods, 15th edition

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Conclusions

Based on an evaluation of test mortalities (corrected for control mortality), this waste would be classified as undesignated waste.

Respectfully submitted,

Laucks Testing Laboratories, Inc.

J. M. Owens

JMO:laj